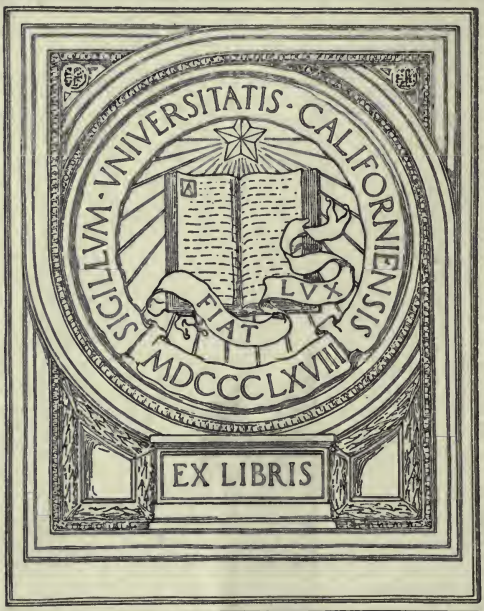
H E
7781
H8

UC-NRLF
$B 30 011

YD 11534

IN MEMORIAM
George Davidson
1825-1911



Professor of Geography
University of California

Union of the Post-Office and Telegraph.

LETTER TO THE POSTMASTER GENERAL

ON THE

EUROPEAN AND AMERICAN SYSTEMS OF TELEGRAPH,

WITH REMEDY FOR THE PRESENT HIGH RATES.

BY

GARDINER G. HUBBARD.

This Edition is printed only for Private Circulation.

BOSTON:

WRIGHT & POTTER, PRINTERS, 79 MILK STREET, (COR. OF FEDERAL.)

1868.

Davidson bookplate

HE7781
H8

Boston, Oct. 19th, 1868.

Hon. A. W. Randall, *Postmaster-General:*

Dear Sir,—I beg leave to submit herewith, for your consideration, certain facts and statements in regard to the operation of the electric telegraph in Europe and in this country, which I have prepared at your request.

The transmission of correspondence by post forms one of the most important functions of the governments of all modern civilized nations. This duty has been committed to the government exclusively, because the interests of the whole people are thereby more effectually subserved than when it is performed by private enterprise.

The conditions essential to the success of the post are celerity, certainty and secrecy in transmission, low and uniform rates, and ample facilities for the reception and speedy delivery of the mail.

Private enterprise might transmit and deliver the mail between large cities at rates lower than those charged by government; but the reverse would be the case between smaller places, and as the majority live in the country, the few would be benefited at the expense of the many.

Greater changes have taken place during the past forty years in the method of transmitting correspondence than in all preceding ages, and greater than will probably be made in the ages to come. The first important change was induced by the introduction of steam as a motive power. This was followed by the substitution of low and uniform rates for high and irregular charges; then by a great increase in the facilities for receiving, transmitting and delivering the mails.

The number of letters passing through the British post-office since the transmission by rail commenced, has increased from 75,000,000 to 705,000,000; and in this country from 40,000,000 to 400,000,000.

M280800

The introduction of the electric telegraph has worked a still more wonderful change. It is for the future to develop and perfect this method.

The reasons that have induced the public to commit to the government the transmission of the mails by rail, have induced most civilized nations to intrust it with the duty of transmitting correspondence by telegraph. England and America are the only important exceptions.

The expediency of uniting the telegraph and the post has been fully discussed in England during the last two years, and the result is the passage of the electric telegraph bill by Parliament in July, 1868, ratifying certain provisional agreements made between the post-office department and the several telegraph companies for the purchase and sale of all the lines of telegraph in the United Kingdom.*

The desirability of a postal telegraph has been brought before congress at different times. A report upon the subject was made by the committee of Ways and Means in 1845, when Prof. Morse obtained an appropriation to aid in the construction of a line of telegraph from Washington to Baltimore. It was again considered in the first session of the thirty-ninth congress, 1866. Executive Document No. 49 of the Senate contains questions from the postmaster-general to gentlemen interested in the largest companies for information upon this subject, with their answers.

In the second session of the fortieth congress, 1868, a bill was introduced, and a valuable paper submitted by the Hon. E. B. Washburne, relating "to the union of the telegraph and postal systems." Another bill was also introduced and referred to the committee on Post Roads and Routes, "to incorporate the United States Postal Telegraph Company and to establish a postal telegraph system."

This country is unsurpassed in the advantages it possesses for the successful development of the telegraph. The climate, character and habits of the people, the various centres of business and the vast extent of territory, combine to give it this superiority. The climate is generally dry, and the telegraph is

* Two valuable and exhaustive reports upon this subject, prepared by Frank Ives Scudamore, with maps and other documents, have been sent by him to the subscriber, and have proved of the greatest service in the preparation of this Report.

operated with greater facility than in most countries in Europe. The character and habits of the people demand dispatch, while economy, both in business and domestic life, is less practised here than abroad. It possesses one great monetary capital, —New York—and one civil capital—Washington—with smaller State capitals. There are great centres for different kinds of business. New York for foreign commerce and money; Boston for New England manufactures; Chicago, St. Louis and Toledo for grain; Cincinnati and Chicago for pork and beef; New Orleans and other Southern cities for cotton. Each of these centres regulates the price of its own staple; each is a commercial monetary centre for its own section; and each has communication with the other centres relating to its staple product. In addition, the great distances which separate the various sections of the country afford facilities for sending messages by night as well as by day, and yet anticipate the mail by many hours.

The magnitude of this interest is shown by the large sum annually expended for correspondence by telegraph. For the year ending June 30, 1867, the whole sum expended for inland letters and papers by the public, was,— . *$17,470,000 00
For messages by telegraph, ... 7,896,000 00

This last sum is larger than the entire expenditure of the post-office department in 1850, and equals the amount annually expended by all the nations of Europe for correspondence by telegraph, though the number of messages transmitted in Europe is much greater.† A comparison of our system with that of other countries will show whether we have availed ourselves of these advantages. For this comparison, three nations have been selected that possess no peculiar advantages for the development of the telegraph—Belgium and Switzerland, where the post and telegraph are united and operated by the State, and Great Britain, where messages are transmitted by private companies as in this country.

* Page 145 of the report of the postmaster-general for 1867, gives the aggregate amount expended for the year ending June 30, 1867, at $19,235,483 00
Less sums expended for foreign mails and congressional matter, . . 1,765,129 00
$17,470,354 00

† Table A gives the number of messages and amounts paid by different nations.

Belgium.

The area of Belgium is about one-fourth that of the State of New York, with nearly the same population. Its greatest length is 175 miles, its width 105 miles. Three-quarters of the population live within fifty miles of Brussels, the capital. Of four of the largest cities, Antwerp, the farthest from the capital, is reached by rail in fifty minutes; while thirty minutes, on an average, elapse between the reception of messages at the telegraph office and their delivery. The great advantage of the telegraph over the post is in its continual departure and arrival, the transmission of letters depending upon the trains and the distribution and delivery of the mail.

In 1850 the private lines then in operation were purchased by the government, and have since been under its management. The rates were originally one franc and a-half for a message of twenty words.* At these rates, the telegraph was little used for inland messages, and its development was very slow. In January, 1863, they were reduced to one franc, and December, 1865, to half a franc.

In 1862, the inland messages,	at	1½	francs,	numbered	105,274
1865, " "	at	1	franc,	"	332,718
1867, " "	at	½	a franc,	"	819,668

Total receipts in 1866,	. . . .	961,112 francs.
" expenses in "	. . . .	839,000 "

Besides the inland messages, there are transit and international messages, the rates for which are fixed by agreement between the several nations of Europe. The rates for these classes of messages have been reduced at different times, but are still considerably higher than for inland messages. The effect of each reduction has been to reduce the cost of each class of messages and increase the number of the class the rates of which were reduced; and though the reduction of the tariff for inland messages by one-half in December, 1865, did not cause an equal reduction in the average cost of each inland

* The message in every State on the Continent is twenty words, including date, address and signature. Gold is reckoned at a premium of 40 per cent.

message, yet but for the extraordinary increase in the number of inland messages, caused by the reduction of rates, the cost of international and transit messages would have remained the same, instead of being largely reduced.

Estimated profits for 1866 on the entire business if no reduction had been made, ...	198,499 francs.
Actual profits for 1866, under the reduced rates, ...	122,112 "
Actual loss by reducing the rates on inland messages one-half,*	76,387 francs.

Total receipts from messages from 1850–1868,	8,777,544 francs.
" expenses for construction, operation and maintenance of lines, . . .	7,784,634 "
Balance of net profit, . .	992,910 francs.

A system of railroads is also owned and operated by the government, and the telegraph is connected with both the railroad and the post. A large proportion of the offices are at the railway stations, but every post-office is an office of deposit, from which messages are dispatched at once, free of charge, to the nearest telegraph office, when in the same district; otherwise by the first messenger or by special carrier, on payment of an extra rate for delivery. This union of the telegraph with the post and railroad reduces the expenses for operators, clerks, general management, rent and office expenses, and brings the system into close connection with every citizen.

The rates are prepaid by stamps, and are uniform and low. The rate for all inland messages by telegraph, or by telegraph and post where the place of deposit or delivery is not on the line of the telegraph, is one-half franc, [or thirteen and a half cents currency.]

The telegraph is used extensively for all kinds of business, social equally with commercial, and by all classes of people. A larger proportion of correspondence is carried on by tele-

* From report of the Belgian Telegraphic Administration for the year 1866.

graph than in any other country. This proportion, and the great increase of business consequent upon a reduction of rates, is shown in the following table, where 1 represents the number of messages before the reduction was made, and also the number of messages per mile of wire:—

	1862.	1864.	1866.
Messages,	1	2.5	6.9
Messages per mile of wire,	1	1.5	2
Messages to letters,	1 to 187	1 to 88	1 to 37
Messages to letters in Great Britain,	1 to 221	1 to 169	1 to 121
Messages to letters in Switzerland,	1 to 80	1 to 70	1 to 69
Messages in proportion to population in Belgium,*	–	–	1 to 6
Messages in proportion to population in Great Britain,	–	–	1 to 5

SWITZERLAND.

The area of Switzerland exceeds that of Belgium, but its population is one-half less. It is about 200 miles long by 138 wide. The Swiss are as different from the Belgians in character and habits as the two countries are in physical aspect. The general arrangements of the telegraph system are similar to those of Belgium. In Switzerland, money orders may be sent by telegraph or post; this feature is of quite recent introduction, and is coming into frequent use. The railroads in Switzerland are not owned or operated by the state; the telegraph is, therefore, connected solely with the post, and about two-thirds of the line are on ordinary roads, one-third only on railroads.

The rates for messages were fixed at the opening of the lines in 1852, at one franc, [twenty-seven cents currency.] The development of the system was much more rapid than in Belgium, as the advantages afforded by the telegraph were relatively greater, the rates being less and transmission by post slower. The proportion of telegrams to letters was therefore

* Table B gives further statistics relating to the Telegraph in Belgium.

greater in Switzerland until the last reduction in rates in Belgium. Since that time the relative proportions have been reversed.

On the first of January, 1868, the rates were reduced to one-half a franc, and the correspondence, which had been increasing at the rate of ten per cent. a year, nearly doubled at once.

The number of inland messages transmitted in the first quarter of 1867 was, . .	76,746
The number of inland messages transmitted in the first quarter of 1868 was, . .	145,207

—an increase of 90 per cent.

Total receipts from messages from 1852 to 1868, ...	7,719,709 francs.
Total expenses for construction, operation and maintenance, ...	7,563,268 "
Balance of net profits, . .	*156,441 francs.

In Belgium and Switzerland the telegraph is used more freely than in other countries. Table A gives such limited statistics as were available, of the operations of the telegraph in other continental nations.

The results deduced from an examination of the continental system are as follows, viz.:

1. That the telegraph is generally employed in certain countries poorly adapted to its development, and where there is comparatively little necessity for its use.

2. That in those countries the rates are low and uniform, and the business most profitable.

3. That the increase of messages is small but regular, excepting after a reduction of rates, when it is immediate and great.

4. That in those countries the telegraph is united with the post, easy of access, and brought into close connection with the people.

5. That the telegraph is used for all kinds of business, social as well as commercial, and by all classes of people.

* Table C gives further statistics relating to the Telegraph in Switzerland.

6. That with the increase of the business the rates have been reduced, and the cost of each message diminished.

7. That messages are of twenty words including date, address and signature, and the rates prepaid by stamps. The lowest rate is one-half a franc, [$13\frac{5}{10}$ cents currency.]

8. That the rate for added words is less per word than for each of the first twenty words.

9. That the delivery is by special carrier, immediate and free of expense to all places within one or two miles of the telegraph office, and there is no extra charge for transmission by mail where either sender or receiver, or both, live at a distance from the lines.

10. That the press messages are few and short.

Great Britain.

In Great Britain a different system prevails, resembling in many respects that in operation in America. The lines are owned and operated by private companies. The Electric and International Telegraph Company, incorporated in 1846, is the oldest and largest company in the kingdom; it transmits over one-half of all the messages.* It pays very large and regular annual dividends, besides reserving an annual surplus. The stock in November, 1867, sold at 43–48 per cent. premium—in June and July, 1868, at 100 per cent. premium. This great rise was caused by the proposition on the part of the post-office department to purchase their lines.

The British and Irish Magnetic Company was incorporated in 1851; it transmits about one-quarter part of the messages. Its lines have more stations throughout Ireland and in certain portions of England than the Electric and International. It also pays regular dividends, and its stock is above par.

The rates for the transmission of messages have always varied with the distance of transmission. Reductions in the rates have been repeatedly made, and the business and profits have increased with each reduction. There are now four rates; the lowest for distances one hundred miles or under is one shilling [thirty-five cents currency,] and over one-half of all the

* The message was originally of twenty words, exclusive of date, address and signature, but in 1854 ten words were allowed for date, &c. The message is therefore of thirty words, including date, address and signature.

messages pay the lowest rate,—the average rate is one shilling fourpence.

In proportion to population, the correspondence by mail in Great Britain exceeds that in Belgium, but the proportion by telegraph is in favor of Belgium, it being used in Great Britain principally by brokers and parties engaged in speculative branches of commerce.

The Act passed on the 31st day of July, 1868, enables the postmaster-general to acquire, work and maintain electric telegraphs. It commences by reciting that the means of communication by telegraph are insufficient, and that many important districts are without any such means of communication; that it would be attended with great advantage to the state, as well as to merchants and traders, and to the public generally, if a cheaper, more widely extended and more expeditious system of telegraphy were established; and that to this end it is expedient that the postmaster-general be empowered to work telegraphs in connection with the administration of the post-office. It authorizes the postmaster-general to buy, and the companies to sell, "their undertaking," on such terms as they may mutually agree upon; the price to be paid to each company is twenty years' purchase of the net profits during the year ending June 30, 1868, and if any difference arises as to the net profits, it is to be settled by arbitration. The postmaster-general, with the consent of the commissioners of the treasury, may from time to time make regulations with reference to office hours and rates of messages, and the general conduct of the telegraph business. Provided—

1. That the rates shall be uniform, not exceeding one shilling for the first twenty words of each message, and not exceeding threepence for each additional five words.

2. That the address and signature shall not be counted as part of the words for which payment shall be required.

3. That there shall be no extra charge for delivery by special foot messenger within one mile of the terminal office, or within the limit of the town postal delivery.

4. That beyond that distance the delivery shall be made by special foot messenger, when desired, and the charge for delivery shall not exceed sixpence per double mile beyond such limits.

5. That when such special delivery is not desired, the message shall be delivered free of extra charge by the ordinary postal delivery.

The postmaster-general is further authorized, with the consent of the commissioners of the treasury, to make contracts with proprietors of newspapers or news-rooms, clubs or exchange-rooms, for the transmission of messages, at rates not exceeding one shilling for every hundred words transmitted between 6 p. m. and 9 a. m., and one shilling for every seventy-five words transmitted between 9 a. m. and 6 p. m., to a single address, with twopence extra to every additional address. The postmaster-general may also let to such party the special use of a wire during such period of twelve hours a day as may be agreed on, at a rate not exceeding £500 a year. He may also permit messages to be deposited in all post-offices or pillar letter-boxes, and such messages shall be transmitted without extra charge. All messages to be prepaid by stamps, or written on stamped paper.

Any person connected with the post-office who shall, contrary to his duty, disclose the contents of any message, shall be guilty of a misdemeanor, and be subject to imprisonment not exceeding one year.

By the reduction of rates and increase of facilities it is expected that the number of messages will be immediately increased from 7,500,000 to 11,650,000, and that the income will be sufficient to defray all expenses of operating and maintaining the lines, including interest on the cost, and to authorize an early reduction of the rates to sixpence, and that the growth of telegraphy will stimulate the correspondence by mail.*

The Telegraph in America.

Reference has been made to the unrivalled advantages which America possesses for the general use of the telegraph. How have these advantages been improved, and what are the peculiar features of the existing system?

One corporation, the Western Union Telegraph Company, transmits over nine-tenths of all the messages. As they publish no accounts of the number of messages transmitted, or of

* Table D gives further statistics in relation to the telegraph in England.

the length of their lines or wires, no accurate statistics of their business can be given; but it is believed that the estimates which have been made are sufficiently correct for the use to which they are put.

RATES.

There is no uniformity in the rates. They are often less to a distant station than to an intermediate one on the same line.

An estimate of the average rates and of the annual number of messages transmitted has been made by ascertaining the rates to seventy-one stations at different distances from Boston, and arranging them in four different classes. Class A includes stations within 500 miles of Boston; Class B those between 500 and 1,000 miles; Class C those between 1,000 and 1,500 miles; Class D those between 1,500 and 2,000 miles. The population of each station, with the aggregate population of all, and the per cent. of population of each station was then obtained, and the average rates of each class ascertained by apportioning 1,000 messages among all the stations, in proportion to the population of each, and dividing the entire receipts of each class by the aggregate per cent. of population of its stations.*

By this calculation the estimated average rates to—

		Miles.		Rates.	Limits.
Stations within	. . .	500	are	$0.41	$0.20 @ $0.90
" between	. . .	500 and 1,000	"	1.43	0.75 @ 2.25
" "	. . .	1,000 and 1,500	"	2.46	1.30 @ 3.40
" "	. . .	1,500 and 2,000	"	3.36	3.25 @ $5.50

Lowest rate in the table, 20 cents; highest, $5.50.

In order to obtain the average rate of all the messages transmitted, it is assumed that

57	per cent.	of all	messages	are	sent	to stations in	Class A.
30	"	"	"	"	"	"	B.
10	"	"	"	"	"	"	C.
3	"	"	"	"	"	"	D.
100							

In England messages are transmitted as follows:—

* Table E gives this estimate.

55	per cent.	to	stations in	Class A.*
30	"	"	"	B.
10	"	"	"	C.
5	"	"	"	D.
100				

As rates are higher in America, a greater proportion of messages are sent to stations in class A than in England, and a smaller proportion to class D. The average receipt per message, at these rates, is $1.00. The gross receipts of the Western Union Company, for the year ending the 30th of June, 1868, were $6,952,273. This sum, divided by the average receipts, gives the whole number of messages transmitted, viz., 6,952,000.†

The lowest rates between any large cities are twenty-five cents between New York and Philadelphia, and thirty cents between New York and Boston, for a message of twenty-five words.‡ At these rates, under the present system, commercial messages are probably transmitted at a loss.

Variation in Rates.

By comparing the rates from New York in 1852, and the rates from Boston to the same stations in 1868, it will be perceived that sixty-one out of seventy-one stations in Table E had telegraph stations in 1852, and to fifty-one of these stations, the rates were lower in 1852 than in 1868.

The rates between New York and Boston—	
In 1850 were	$0 50
1852, ...	20

* In England, the rates are as follows: Class A, under one hundred miles, one shilling; class B, between one hundred and two hundred miles, one shilling and sixpence; class C, over two hundred miles, two shillings; class D, to Ireland, from three to four shillings.

† It may be objected that those estimates are incorrect, and therefore the deductions are unreliable. If the Western Union Telegraph Company furnish a statement of messages annually transmitted, the required corrections will be made. If it is not given, it will be because the estimates of the average rates are too low, and the deductions too favorable to that company.

‡ Ten words are allowed for every message; date, address and signature unlimited. The average length of messages is twenty-five words—ten pay words, and fifteen for date, address, signature, and memoranda of the company of the amount paid, or to be paid, the number of the message, and the number of words in the message.

Later, ...	$0 15
Then raised to	40
Subsequently raised to	65
In 1866 reduced to	30

The history of the telegraph will explain the causes of these different rates. Great competition, in 1852, caused a large reduction in the rates. Soon after, the validity of Mr. Morse's patent was confirmed by the courts, many of the competing companies were enjoined, and compelled to wind up or sell out, and some failed. In the Eastern and Southern States, the American Telegraph Company, in which Mr. Morse and his friends were largely interested, bought out most of the old companies, and continued to occupy their territory for many years without serious opposition.

The various companies in the West, South, and North-West, forming groups of feeble organization, were gradually merged into one corporation, under the name of the Western Union Telegraph Company. In 1864, the United States Telegraph Company, formed by a consolidation of three companies, was organized to oppose this monopoly, and entered into a vigorous competition with the Western Union, prices were reduced in consequence, and the business increased with great rapidity. In 1866, the American Telegraph Company, the United States Telegraph Company, and the Western Union were united under the corporate name of the last corporation, prices were again raised, and this first caused a less ratio of increase, and finally, if the returns are correct, an actual decrease in the telegraphic business of the country.

According to the returns made to the commissioner of the internal revenue, the receipts from all the companies were, for the—

Year ending June 30th,		1865,	$4,300,000.	
"	"	"	1866, 6,168,700;	increase, 43 per cent.
"	"	"	1867, 7,986,400;	" 30 " "
"	"	"	1868, 7,156,639;	decrease, 10 " "*

* The receipts of the Western Union Telegraph Company for the year ending the 30th of June, 1867, were $6,568,925; for the year ending 30th of June, 1868, $6,952,273,—an increase of about six per cent.

Within the last year or two, competition has again arisen on certain lines, and an examination of the rates shows the places at which rival lines have stations.

In other countries, the rates are reduced with the growth of business, and are never raised. In this country, they are reduced by competition, followed by consolidation of the competing companies, and subsequent increase of rates, without regard to the growth of the business. The rates are never published, and are without uniformity or system. The consequence is that the public are universally ignorant of the rates, and many do not, for that reason, make use of the telegraph.

In Europe, the rates for added words are less than the rate per word for the first twenty words. In Switzerland, the charge for the first twenty words was one franc; for ten added words, one-quarter of a franc. Parliamentary rates in England are, one shilling for the first twenty words; threepence for every additional five words or part of five words. In this country, they are much higher. From New York to Philadelphia and Boston, the rates for the first twenty-five words are one cent for each word. The rates for added words are two and three cents—four and six times more than would be charged if the Swiss rule was adopted.

Prepayment is at the option of the sender. This increases the length of the message and the cost to the company, as it transmits with the message the amount paid or to be paid, which adds from two to six words to every message.

Connection with Railroads.

The telegraph in this country is very generally connected with the railroad system, and a large proportion of the offices are at railroad stations. These are seldom in the centre of the towns, and are not resorted to as generally as the post-office. In the large cities, the principal offices are near the business centres, with a number of secondary offices, generally at hotels and railroad stations. The rent of the main offices is very large, and the expenses for operators, clerks and managers are also necessarily much more than when the telegraph is connected with the post.

Cause of the High Rates.

The lowest American rates are higher than the average foreign rates, and the average rates several times higher than the foreign. These high rates retard the development of the system, which was more rapid in its early growth in this than in any other country. What are the reasons assigned for these high rates? Are they well founded, and if not, how can they be obviated? They are—.

1. That the great length of the lines, and multitude of wires require a large capital and heavy operating expenses, and that the present rates yield only a small net income.

2. That a reduction of rates would be followed by an increase of business, and a reduction of receipts without any reduction of expenses, and would quickly "lead to ruin."

3. That the great number of local stations necessarily maintained for the public convenience, requires higher through rates than would be otherwise necessary.

4. That the messages are sent great distances; the cost, it is assumed, increasing with the distance.

5. The short time each day during which the larger proportion of messages are transmitted—from ten until two o'clock, P. M.

1. That the great length of the lines and multitude of the wires* require a large capital, and heavy operating expenses, and that the present rates yield only a small net income.

According to the annual report of the Western Union Telegraph Company for the year ending 30th June, 1868,—

The entire investment of the company was,		$47,877,350 00
This consisted—		
Of capital, ...	$41,022,700 00	
bonded debt, . . .	4,890,500 00	
profits used for purchase of stock, property and redemption of bonds, .	1,964,150 00	
		$47,877,350 00

* The length of a line is equal to the distance between the terminal stations. A line has one or more wires. In England, there are on an average five miles of wire to every mile of line. In this country, the proportion is probably less.

The gross income from the date of the present organization in 1866, to 30th June, 1868, was . . . $13,521,199 00

This income was expended—

For operating expenses, . .		$8,304,314 00	
For dividends and interest,	$2,220,578 82		
For construction, .	902,808 31		
For sinking fund and bonds, .	876,355 00		
Balance, .	1,217,142 87		
		5,216,885 00	
			$13,521,199 00

Annual profit on investment, $5\frac{1}{2}$ per cent.

Is this large investment required?

The average cost of foreign lines is about $80 per mile. Lines constructed in the most approved manner can be built and equipped ready for working, at less than $150 for each mile of wire, with an average of four wires to each mile of line.

The largest part of the lines of the Western Union Company were constructed before the rise in prices, and on a gold basis.

The lines of the American Telegraph Company, comprising one-third of the lines of the Western Union Company, at its reorganization in 1866, cost $133 per mile.* This amount included the sums paid Mr. Morse and his associates for their patents, which have expired.

The stock of the Western Union Telegraph Company sold in August and September, 1868, at one-third of its par value.

Its market value at this rate is	
Capital, $41,000,000÷3=	$13,666,666 00
Plus the bonded debt, ...	4,890,500 00
100,000 miles of wire, market value, .	$18,557,166 00

In 1866 it had 90,000 miles of wire. Since that time, $900,000 have been invested in the construction of new lines; at $150 per mile, equal to 6,000 miles.

These estimates give the following results of the probable cost and value of the property of the Western Union Telegraph Company:—

* Senate Document No. 49, 1st session 39th Congress, 1866.

100,000 miles of wire, at	$150.00 per mile, .	$15,000,000 00
" " " "	133.33 " .	13,333,000 00
" " " "	180.00 " .	18,000,000 00
Average of these sums is	154.00 " .	15,444,000 00
Cost based on investment, 100,000 miles of wire at	479.00 " .	47,900,000 00

The profits of the Western Union Telegraph Company for the two years ending 30th June, 1868, were . $5,216,886 00
Ten per cent. a year on $15,444,000 for two years, is 3,088,800 00

Balance, ... $2,128,086 00

The same business could be carried on with a smaller capital, and pay larger dividends at reduced rates, with the present expenses.

It does not appear what occasioned this large investment. The presidents of the American, and Western Union, and United States Telegraph Companies, in their joint letter before referred to, say: "That the length of wire owned by the Western Union and United States Companies is 60,000 miles; average cost based on the united capital is $450 per mile,"* and that "the lines of the American Company embrace 30,000 miles of wire, the average cost per mile based on the capital, is $133.33." No mention is made of any debt.

These figures give the following results:—

Western Union,	60,000 miles, based on a capital of	$450 per mile,	$27,000,000
American Co.,	30,000 " " " "	133 "	4,000,000
Combined,	90,000 " " " "	344 "	$31,000,000
1868,	100,000, " based on investment,	479 "	$47,877,350
Increase in cost, . .	" " "	135 "	16,877,350†

2. A reduction of rates would be followed by a corresponding reduction of receipts, without any relative reduction of expenses, and would "lead to ruin."

* Senate Document No, 49, 1st session 39th Congress, 1866.

† This sum was probably paid for the purpose of effecting the consolidation.

The presidents, in their joint letter, say: "That in order to map out the effect of a reduction of 25 and 50 per cent. from the present tariff, after what has been said, can only show how quickly such a process would lead to ruin."* Here is one of their exhibits:—

"American Telegraph Company under existing tariffs:	
"Receipts, 1865, ...	$1,437,627 21
"Expenses averaged, ...	1,186,664 08
"Profit, ...	$250,973 13
"Tariff reduced 25 per cent.:	
"Receipts, ...	$1,053,220 41
"Increase 25 per cent., ...	263,305 10
	$1,316,525 51
"Expenses not increased, ...	1,186,654 08
"Profit, ...	$129,871 43"

The gentlemen who made this statement are at the head of the telegraph business in this country, and are directors in the Western Union Telegraph Company. They believed a reduction would produce this result, and have acted on this belief, steadfastly refusing to reduce rates until forced by competition; then consolidating with the competing company and again raising the rates.

We can give the actual results of such a reduction for comparison with this theoretical exhibit. The rates in Great Britain were reduced 26 per cent.—from 2*s.* 10¼*d*, in 1862, to 2*s.* 1*d.* in 1866. The messages transmitted by the Electric and International Telegraph Company during that period increased from 1,534,590 to 3,150,149, or 105 per cent.

The revenue increased from £219,441 to £336,458, or 53 per cent.

The expenses increased from £148,609 to £208,739, or 40 per cent.

* Senate Document No. 49, 1st session 39th Congress, 1866.

The net income increased from £70,832 to £127,719, or 80 per cent.

Proportion of working expenses to gross revenue was reduced from 67 per cent. to 62 per cent.

Proportion of net revenue to capital increased from $7\frac{8}{10}$ per cent. to 12 per cent.

Number of messages per mile of wire from 44 per cent. to 66 per cent.

Gross receipts per mile of wire from				£6	5*s.*	1*d.*	to	£7	1*s.*	5*d.*
Working cost	"	"	"	4	4	9	to	4	7	9
Net receipts,	"	"	"	£2	0*s.*	4*d.*	to	£2	13*s.*	8*d.**

Applying these results to the theoretical exhibit:

Revenue as before, ...	$1,437,627 00
Increased 53 per cent. by reduction, to . .	$2,199,500 00
Expenses increased 40 per cent., to . .	1,661,310 00
Profits, ...	$538,190 00
Estimated profits by the exhibit, . .	129,871 00
Difference between actual and estimated profits,	$408,319 00
Profits after reduction, ...	$538,190 00
Profits without reduction, ...	250,973 00
Actual gain by reduction, . . .	$287,217 00

The European statistics prove that, with lines built for cash, reasonable reduction in rates, not forced by competition, but based on the increase of business, will greatly increase the number of messages and the net profit.

3. The great number of local stations necessarily maintained for the public convenience, require higher through rates than would otherwise be necessary.

When the rates to local stations are uniform with rates to main stations at a greater distance, and the line is filled with

* Electric Telegraphs, No. 80, 1868, page 140.

through business, the business to the local stations is comparatively unprofitable, and a through line can transmit messages at a lower rate than a through and local line. For this reason some of the new companies do not establish local stations. Allowance must therefore be made for these increased expenses in fixing the through rates.

4. That the messages are transmitted great distances, the cost, it is assumed, increasing with the distance.

An examination shows that the rates do not increase with the distance, but in a much more rapid ratio.

	Distance 500 miles;	500 to 1,000;	1,000 to 1,500;	1,500 to 2,000 miles.
Present rates, . . .	$0.41	$1.43	$2.41	$3.41
Rates increased with distance,	0.41	0.82	1.41	1.64

The European statistics are of no service on this point, since their longest distances are hardly as long as our shortest lines.

It is estimated that on a through line, without local business, less than 25 per cent. of the operating expenses depend on distance. The instruments, operators, clerks, managers, rent, office expenses, salaries, messengers and stationery are independent of distance. Depreciation, repairs, and a few minor items of expense are increased by distance.

Where a message is repeated, the expense is increased about seventy-five per cent.; but on well constructed lines, in ordinary weather, messages between any two stations east of a line from St. Paul to New Orleans require but one repetition.

5. The short time each day during which the larger proportion of messages are transmitted, from ten until two o'clock, p. m.

Is this necessary, or is it occasioned by the high rates? The capacities of the line of telegraph are very great. 2,000 words an hour are easily transmitted by a good operator, over a single wire. At this rate there could be sent over fifty-one of the eighty or ninety wires leading from the New York office of the Western Union Telegraph Company, 2,448,000 words, or 97,920 messages, of twenty-five words each, a day. This amount cannot be obtained. Forty messages an hour are easily transmitted by a good operator over a through line, and this number could be sent every hour by relays of operators. This estimate gives 1,224,000 words, or 48,960 messages. On through and local lines, a deduction of one-half for twelve hours of the day

during which the local lines are open, must be made—which leaves 918,000 words, or 36,720 messages, as the number which can be transmitted every day on these fifty-one wires. The average number actually transmitted is 184,378 words, or 7,375 messages.* 733,622 more words, or 29,340 more messages might daily be transmitted over these lines. If the present business could be distributed over all the hours of the day, or if there were sufficient business for all the wires the whole day, the rates could be largely reduced.

On an average nearly eighteen hours a day the wires are idle, yet a considerable portion of the expenses of the line are no greater than they would be if messages were transmitted the whole time.† Interest, depreciation and repairs, office rent, salaries and general management are the same, whether much or little business is transacted. These items constitute about one-third of all the expenses on the Western Union line. The other expenses will not be increased in proportion to the increase of the time, as, under the present system, a portion of each day for which the employees are paid, they are without steady occupation.

A reduction of rates will induce parties who now send but few messages daily, to greatly increase the number, and others, who make no use of the telegraph, to become its regular patrons.

In England, and to a great extent in this country, the use of the telegraph is limited to a few individuals, engaged in extra hazardous or speculative business, where large possible gains warrant great expenses. The high rates prevent its use by general merchants or for social purposes. According to the statements of the manager of the Electric and International Telegraph Company, the use of the telegraph in England "is confined to stock brokers, mining agents, ship brokers, racing and betting men, fruit merchants and others engaged in business of a speculative character, or who deal in articles of a perishable nature. Merchants use it little compared with those engaged in the more speculative branches of commerce." In other countries it is more generally used.

* Journal of the Telegraph, Oct. 1, 1868,—the official publication of the Western Union Telegraph Company.

† The W. U. T. Co. recently reduced the rates on night messages, with the expectation of working their long lines a larger part of each day.

In Denmark, "the telegraph is used by mercantile people in general, and for social and domestic purposes."

In Switzerland, "the telegraph is far from being confined to certain classes, and the messages which relate to private business and to family affairs form as important a part of the whole number as the messages of the banking and other trading interests."

In Belgium, "nearly fifty-nine per cent. of messages are on private business and family affairs."

In France, "the telegraph is not confined to the demands of the speculators, who are found only in the great centres, but is used by all branches of commerce, and for all the family wants, and as well in the small towns as in the larger cities. Forty-one per cent. are on family affairs."

In Prussia, "when rates were high, and the facilities few, its use was almost exclusively confined to bankers, stock brokers, large commercial houses, and newspaper correspondents. Each reduction of rates, or extension of the system to small towns, considerably increased the number of those who regularly send and receive messages."*

A reduction of rates here will produce a like result. A more general and extended use of the telegraph will immediately follow. It will be employed throughout the whole day, and messages to distant stations will be transmitted at night, and outstrip the mail by many hours.

Social messages are generally transmitted without reference to the time of the day, but in this country the number is small, as few can afford the luxury. Reduce the rates, and increase the facilities, and the number will increase greatly, and be distributed through the hours of the day.

Brokers, social and other local messages, will occupy the wires by day, the through messages by night. Abroad, the business being over short distances, is confined to the daytime, and pays, with low rates: here, with the wires crowded by night as well as by day, the profits, at low rates, would be much greater.

The business will be greatly increased by furnishing additional facilities for the reception and delivery of messages. The statistics of the British post-office show that the increase

* From exhibits annexed to the Special Report of the Committee on the "Electric Telegraph Bill."

of facilities for the reception and delivery of letters, caused a greater increase in their number than the reduction of postage.

Proposed Remedy.

It is not considered expedient either for the government to purchase the existing lines, or to construct and operate lines. How then can the desired results be best attained? The post-office department has no facilities of its own for the transmission of correspondence, either by rail or telegraph. It contracts with the railroad companies for carrying the mail, and it is proposed that it shall contract with a telegraph company for transmitting messages.

A bill was introduced at the last session of congress, and referred to the committee on Post Roads and Routes, to incorporate the "United States Postal Telegraph Company, and to establish a postal system."

The first, second, third, fourth and fifth sections of the bill incorporate the company, with power to construct lines on all the post roads and routes of the country.

The sixth section authorizes the Postmaster-General to receive bids from any telegraph company for the transmission by telegraph of messages received and delivered through the post-office, to all cities and villages of 5,000 inhabitants and over, and to towns on the line of the telegraph, where stations may be established by order of the Postmaster-General.

The seventh section authorizes the Postmaster-General to contract for the transmission of messages by telegraph, with the company that will engage to transmit them for the least sum, provided such sum does not exceed twenty-five cents, including five cents postage for each message of twenty words, including date, address and signature, for each and every 500 miles or fractional part thereof the message may be transmitted, with five cents for each added five words. All messages to be prepaid by stamps, or written on stamped paper.

Messages to be received at any and all post-offices, street boxes or other receptacles for letters, and to be delivered by special carrier without extra expense.

Messages requiring immediate dispatch to have priority of transmission on payment of extra rates.

Money orders to be transmitted by telegraph under such regulations as the Postmaster-General may prescribe.

The eighth section provides that if the United States Postal Telegraph Company shall refuse to make a contract with the Postmaster-General on the rates specified in the bill, the act, so far as it relates to the incorporation of the company, shall be null and void.

The effect of the proposed reduction will be better appreciated by comparing the present and proposed rates.

	Present. rates.	Proposed rates.	Reduction.	Pro rata reduction.
To stations within 500 miles, . .	$0 41	$0 30	$0 11	26 per ct.
" " between 500 and 1,000 miles, ...	1 43	55	88	62 "
To stations between 1,000 and 1,500 miles, ...	2 41	81	1 60	67 "
To stations between 1,500 and 2,000 miles, ...	3 41	1 47	1 94	56 "
Averages, ...	$1 00;	$0 47;	53	53 "

The post-office department will furnish stamps and stamped paper for messages, and envelopes; it will envelope, direct and deliver the messages, in addition to the expenses common to letters and messages. For these extra expenses it will receive an advance of sixty-six per cent. over the present postage, and will be saved the expense of transmission, which is fifty-six per cent. of the cost of each mailed letter. The cost for each letter delivered by carriers is one cent; for special delivery of messages by telegraph companies, two cents. This expense will be reduced by combining the two systems, and making the special deliveries regular during the whole day.

Over thirty per cent. of the expense of telegraphing will be saved to the country, if the business is transacted in connection with the post-office department.

It is not claimed that either the Western Union Telegraph Company, or any other company, or even the government itself, could transmit messages throughout the country at the rates proposed in the bill, without loss.

But it is claimed that a company with well-constructed lines, built for cash, can transmit messages at these rates, in connection with the post-office, and realize a large profit on the investment, with a small net revenue to the department.

1. The expense of transmission is reduced as the number of messages transmitted is increased.

2. The cost of rent, general management and office expenses will be very greatly reduced and shared with the department.

3. Fewer clerks and managers, and less stationery and printing will be necessary, and the reduced expense will be divided with the department.

4. The number of words in each message will be reduced by the prepayment of the messages, and the expenses will also be reduced by giving the operators constant employment.

5. The facilities at local offices will be increased, with reduced expenditures.

6. The facilities in the large cities for the reception and delivery of messages through the sub-offices, street boxes, and letter carriers, will be greatly increased, with decreased expenses.

Instruments have been recently invented, and are in operation, either in England or in this country, by which two great hindrances to the efficiency of the telegraph are remedied. Mr. Stearns, president of the Franklin Telegraph Company, has invented an instrument by which messages are transmitted both ways at the same time, on the same wire, thus doubling its capacity, without any increase of expense. Sir Charles Wheatstone, in England, has invented an instrument by which double the number of words can be transmitted and received on the same wire, at an increased expense in the preparation of the message for transmission. Instruments are also in operation in Great Britain, worked by boys, after instruction of one or two days. These different inventions provide, one for through and the other for local business, while the new steel and copper wire, with its greater strength and less size and weight in proportion to its conductivity, requires a less number of insulators, affords fewer points of contact with conducting surfaces, and transmits messages greater distances, in all weathers, without repetition.

With reduced rates, improved instruments and wires, and increased facilities, the future of the telegraph in America will fulfil the prophecy of its youth, and the correspondence of the East with the West, and of the North with the South, will be transmitted by the electric telegraph, and time and distance be annihilated.

I am, yours respectfully,

GARDINER G. HUBBARD.

Table A.

Statistics of the Telegraph in Europe for the Year 1866.

NAME OF COUNTRY.	Number of Stations.	Miles of Wire.	Rates in 1868.	Number of Messages.	RECEIPTS.
England,	2,151	80,466	1 shilling.	6,127,000	£ sterling 512,707 × $4 84 = $2,481,500 00
France,	1,209	68,687	½ & 1 franc.*	2,842,554	Francs 7,707,590 × 20 = 1,541,518 00
Austria,	851	73,854	–	2,507,472	Florins 1,644,742 × 41 = 674,344 00
Prussia,	538	55,149	†	1,964,003	Thalers 1,275,785 × 72 = 918,565 00
Belgium,	356	6,146	½ franc.	1,128,005	Francs 961,112 × 20 = 194,442 00
Switzerland,	333	3,717	½ franc.	668,916	" 684,471 × 20 = 136,894 00
Bavaria,	–	4,945	–	–	Florins 322,886 × 41 = 132,383 00
Norway,	73	2,710	–	269,375	Rix Dolls. 343,645 × 53 = 182,131 00
Russia,	308	37,330	–	838,653	Roubles 1,872,659 × 21⅞ = 372,309 00
Italy,	529	22,214	–	1,760,889	Lira 4,120,311 × 18 6/10 = 766,750 00
Spain,	–	–	–	533,376	Dollars 554,475 × 1 00 = 554,475 00
Netherlands, Denmark, Sweden, Turkey, Greece,	–	–	–	1,500,000‡	× 42 = ‡630,000 00
Total messages,				18,640,243	Total receipts, $8,585,311 00
Average rate per message in Europe,					$0 42

* These rates took effect on Sept. 1, 1868. † For distance of 65 miles and under, 6d.; between 65 and 230 miles, 1s. 3d; over 230 miles, 1s. 6d. ‡ Estimated.

A portion of this table was received from Hon. JOHN A. DIX, Minister to France, since the letter was printed.

Table B.

Belgium.

YEARS.	Number of Offices.	*Kilometres of Line.	*Kilometres of Wire.	Number of Messages.	No. of Inland Messages.	Pro rata Increase of Inland Messages.	Number of Inland Letters.	Proportion of Inland Messages to Letters.	Receipts in Francs.	Expenses Work'g and Maintaining in Francs.
1860, . .	–	–	–	225,819	80,216	–	17,532,502	1 to 218	523,743	332,500
1861, . .	–	–	–	268,968	97,945	20 per cent.	19,185,400	1 to 195	588,532	363,261
1862, . .	196	1,890	4,803	291,787	105,274	7½ "	19,770,816	1 to 187	605,044	405,300
1863, . .	252	2,647	6,238	416,113	188,825†	80† "	21,537,100	1 to 114	612,363	469,500
1864, . .	280	2,988	7,118	546,697	252,501	33 "	22,271,808	1 to 88	789,399	551,486
1865, . .	307	3,220	8,693	674,034	332,718§	32 "	24,530,688	1 to 73	865,640	660,700
1866, . .	356	3,519	9,989	1,128,005	692,536§	108§ "	25,624,032	1 to 37	961,112	839,000
1867, . .	374	3,740	11,938	1,293,870	819,668	18 "	–	–	1,074,214	977,787

Total receipts from Jan. 1, 1850, to Jan. 1, 1868, ...		8,777,544 francs.
" cost of construction, ...	2,005,999	
" expense for working and maintaining, ...	5,778,635—	7,784,634 "
Net income, ...		992,910 francs.

* A Kilometre is 3-5ths of a mile, 3,280 feet.

† January 1, 1863, the charge for inland messages of 20 words was reduced from 1½ francs to 1 franc.

§ December 1, 1865, " " " " " " 1 " ½ "

Table C.

Switzerland.

YEARS.	Number of Offices.	Kilometres of Line.	Kilometres of Wire.	Number of Messages.	No. of Inland Messages.	Pro rata Increase of Inland Messages.	Number of Inland Letters.	Proportion of Inland Messages to Letters.	Receipts in Francs.	Expenses Work'g and Maintaining in Francs.
1860, . .	145	2,855	4,104	303,930	208,311	–	17,673,159	1 to 84	408,429	299,323
1861, . .	157	2,990	4,224	331,933	217,700	9 per cent.	19,055,319	1 to 87	448,056	317,844
1862, . .	177	3,173	4,680	373,452	241,814	11 "	19,463,064	1 to 80	530,417	331,579
1863, . .	199	3,192	4,960	456,871	298,778	23 "	22,322,166	1 to 74	630,748	390,848
1864, . .	223	3,321	5,481	514,952	325,165	9 "	22,913,924	1 to 70	615,317	425,682
1865, . .	252	3,432	5,990	591,214	364,118	11 "	25,183,136	1 to 69	726,564	487,549
1866, . .	284	3,559	6,600	668,916	383,158	5 "	–	–	684,471	529,420
1867, . .	333	3,853	7,421	708,974	397,289	3 "	–	–	775,024	570,000

Total receipts from 1852 to 1867, ...			7,719,709 francs.
" cost of construction, ...	2,249,805 francs.		
" expenses of working and maintaining, ...	5,313,463 "	—	7,563,268 "
Net income, ...			156,441 francs.

From 1853 to Jan. 1, 1868, the rate for inland messages of 20 words was 1 franc; Jan. 1, 1868, it was reduced to ½ franc.

The number of inland messages transmitted during the first 3 months of 1867, was	76,744
" " " " " " " 1868, was	145,207
Increase, ...	68,463

Table D.

England.

YEAR.	No. of Offices.	No. of Miles of Line.	No. of Miles of Wire.	No. of Inland Messages.	Pro rata increase of Inland Messages.	No. of Inland Letters.	Proportion of Inland Messages to Inland Letters.
[illegible]	1,032	10,854	51,556	1,863,839	– –	552,721,000	1 to 296
[illegible]1,	1,391	11,528	55,004	2,123,589	25 per cent.,	581,376,000	1 to 273
1862,	1,616	12,711	57,879	2,676,352	25 "	593,361,000	1 to 221
1863,	1,755	13,944	65,726	3,186,724	20 "	629,478,000	1 to 197
1864,	1,831	14,981	72,374	3,924,855	25 "	665,503,000	1 to 169
1865,	2,040	16,066	77,440	4,662,687	19 "	706,057,000	1 to 151
1866,	2,151	16,588	80,466	6,127,000	31 "	– –	–

RATES.

The original rates for messages of 20 words were 1*d.* per mile for 50 miles, $\frac{1}{2}$*d.* per mile between 50 and 100 miles, $\frac{1}{4}$*d.* per mile over 100 miles.

In 1850 the maximum charge was reduced to 10*s.*

1851

1854 the charge for address, &c., was discontinued, practically lengthening the message to 30 words.

1855 the rate for 50 miles was 1*s.* 6*d.*, 50 to 100 miles, 2*s.*, 100 to 150 miles, 3*s.*, over 150 miles, 4*s.*

1862 the rate for 25 miles was 1*s.*, 50 miles, 1*s.* 6*d.*, 50 to 100 miles, 2*s.*, 100 to 200 miles, 2*s.* 6*d.*, 200 to 300 miles, 3*s.*, over 300, 4*s.*

1864 the rate for 50 miles was 1*s.*, 50 to 100 miles, 2*s.*, 100 to 200, 2*s.* 6*d.*, over 200 miles, 3*s.*

1865 the rate for 100 miles was 1*s.*, 100 to 200 miles, 1*s.* 6*d.*, over 200 miles, 2*s.*, to Ireland, 3 to 4*s.*

1869 the rate for cities will be 6*d.*, all other rates 1*s.*

GAYLORD BROS. Inc.
Syracuse, N. Y.
Stockton, Calif.

14 DAY USE
RETURN TO DESK FROM WHICH BORROWED

LOAN DEPT.

This book is due on the last date stamped below, or on the date to which renewed.
Renewed books are subject to immediate recall.

LIBRARY USE

AUG 23 1963

AUG 23 1963

INTERLIBRARY LOAN
DEC 08 1992
UNIV. OF CALIF., BERK.

General Library